

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently amended): A multiple wavelength surface-emitting laser device comprising:
 - a substrate; and
 - a plurality of surface-emitting lasers that are formed on the substrate by a continuous manufacturing process,
wherein each of said plurality of surface-emitting lasers comprises:
 - a bottom reflection layer on the substrate, that is doped with impurities of a first type and that is composed of alternating semiconductor material layers having different refractive indexes;
 - an active layer on the bottom reflection layer;
 - an intermediate layer that is doped with impurities of a second type on the active layer;
 - a top electrode on the intermediate layer, said top electrode having a window through which light is emitted; and
 - a dielectric reflection layer where dielectric materials with different refractive indexes are alternately layered on the intermediate layer and the top electrode to be dielectric layers of a thickness suitable for a desired selected resonance wavelength, whereby the desired selected

resonance wavelength is controlled by adjusting the thickness of the dielectric layers of the dielectric reflection layer.

2. (Original) The multiple wavelength surface-emitting laser of claim 1, wherein the dielectric reflection layer is composed of two different dielectric materials with different refractive indexes.

3. (Original) The multiple wavelength surface-emitting laser of claim 2, wherein the dielectric reflection layer is composed of any two dielectric materials selected from the group consisting of TiO₂, Ta₂O₅, ZrO₂, HfO, SiO₂ and MgF₂.

4. (Original) The multiple wavelength surface-emitting laser of claim 1, wherein the dielectric reflection layer is composed of any two dielectric materials selected from the group consisting of TiO₂, Ta₂O₅, ZrO₂, HfO, SiO₂ and MgF₂.

5. (Original) The multiple wavelength surface-emitting laser device of claim 1 further comprising a high resistance part that confines electric current between the active layer and the top electrode.

6. (Currently amended): A method of manufacturing a multiple wavelength surface-emitting laser device comprising the steps of

sequentially forming, on a prepared substrate, a bottom reflection layer, that is doped with impurities of a first type and composed of alternating semiconductor material layers having different refractive indexes, an active layer and an intermediate layer that is doped with impurities of a second type;

forming an arrangement of a plurality of surface-emitting lasers by removing from a region separating the surface emitting lasers, the intermediate layer, the active layer and a part of the bottom reflection layer by etching;

forming on the intermediate layer of each surface-emitting laser a top electrode having a window through which light is emitted; and

forming on at least one of the intermediate layer and the top electrode of each surface-emitting laser, a dielectric reflection layer where different dielectric materials are alternately layered to be dielectric layers of a thickness suitable for a desired selected resonance wavelength, whereby the desired selected resonance wavelength is controlled by adjusting the thickness of the dielectric layers of the dielectric reflection layer.

7. (Original) The method for manufacturing a multiple wavelength surface-emitting laser device of claim 6, wherein the dielectric reflection layer is composed of two different dielectric materials with different refractive indexes.

8. (Original) The method for manufacturing a multiple wavelength surface-emitting laser device of claim 7, wherein the dielectric reflection layer is composed of any two dielectric materials selected from the group consisting of TiO₂, Ta₂O₅, ZrO₂, HfO, SiO₂ and MgF₂.

9. (Original) The method for manufacturing the multiple wavelength surface-emitting laser device of claim 7, wherein the dielectric reflection layer is formed by using an optical deposition unit.

10. (Original) The method for manufacturing the multiple wavelength surface-emitting laser of claim 6, wherein the dielectric reflection layer is composed of any two dielectric materials selected from the group consisting of TiO₂, Ta₂O₅, ZrO₂, HfO, SiO₂ and MgF₂.

11. (Original) The method for manufacturing the multiple wavelength surface-emitting laser device of claim 6, wherein the dielectric reflection layer is formed by using an optical deposition system.

12. (Original) The method for manufacturing the multiple wavelength surface-emitting laser of claim 6 further comprising a step of forming a high resistance part that confines electric current between the active layer and the top electrode.

13. (Currently amended): A multiple wavelength surface-emitting laser device comprising:

a substrate; and

a plurality of surface-emitting lasers formed on the substrate by a continuous manufacturing process,

wherein each of said plurality of surface-emitting lasers comprises:

a bottom reflection layer on the substrate, that is doped with impurities of a first type and that is composed of alternating semiconductor material layers having different refractive indexes;

an active layer on the bottom reflection layer;

an intermediate layer that is doped with impurities of a second type on the active layer;

a top electrode on the intermediate layer, said top electrode having a window through which light is emitted; and

a dielectric reflection layer comprising dielectric layers composed of dielectric materials with different refractive indexes alternately layered on the intermediate layer and the top electrode so that a thickness of the dielectric layers is optimized for a ~~desired~~ selected resonance wavelength, whereby the ~~desired~~ selected resonance wavelength is controlled by adjusting the thickness of the dielectric layers of the dielectric reflection layer.